

Relation between incidence of gonorrhoea in Sheffield and efficiency of contact tracing: a paradox?

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SUMMARY An attempt has been made to correlate the yearly incidence of gonorrhoea in Sheffield (1979-85) with two variables to show contact tracing efficiency: infectious patient days (days from the start of contact tracing to the attendance of contacts) and the percentage of source contacts brought to investigation within 30 days. No such correlation has been found. The possible reasons for this, which include the unreliability of incidence figures as a sole criterion of control and the organisation of contact tracing activities, are discussed.

Introduction

We have shown previously that the control of gonorrhoea in Sheffield is satisfactory and have suggested that such control may be related to efficient contact tracing.¹ Felton, however, has proposed that gonorrhoea is endemic in the United Kingdom and its control very little influenced by successful treatment and diligent contact tracing.² His theory is so at variance with that of others (Wilcox,³ Yorke *et al*,⁴ and Constable, unpublished observation) that the present study was formulated to explore further the relation between contact tracing and the incidence of gonorrhoea in Sheffield, an industrial city with a relatively stable population.

Patients and methods

This clinic, the population it serves, and our diagnostic criteria for gonorrhoea have been described previously.¹ The incidence of the infection in Sheffield is thought to parallel closely its prevalence.

SURVEY METHODS

Yearly incidence of gonorrhoea

I took these figures from the statutory SBH60 forms submitted to the Chief Medical Officer for the years 1978-85 inclusive.

Variables to show contact tracing efficiency

I used two variables likely to indicate the efficiency of

contact tracing: infectious patient days (days between the start of contact tracing and attendance of contacts) and the percentage of source contacts brought to examination within 30 days. For each year in question both variables were evaluated by a process of representative chart review; I scrutinised all charts of infected patients for two months, February and May. Source contacts were included only if two experienced contact tracers and I agreed. I then calculated the percentage of such people brought to treatment within 30 days and the number of whole days between the start of the contract tracing and the attendance of such contacts at this clinic (infectious patient days). Excluded from analysis, but reported on for comparison, were source contacts already attending this or another clinic, or who had given insufficient data about contacts for tracing to be started.

STATISTICAL ANALYSIS

The mean and SEM infectious patient days were calculated for each year in question by usual methods. The two variables chosen to show efficiency of contact tracing were compared with yearly incidence of gonorrhoea by Spearman's rank order correlation coefficient (ρ).

Results

The table shows the number of source contacts sought compared with those not sought in representative two monthly periods during each year 1978-85. Figure 1 shows the yearly incidence of gonorrhoea compared with mean infectious patient days ($p=0.1$). Figure 2 compares the yearly incidence with the percentage of source contacts attending this clinic within 30 days ($p=0.09$). The correlation coefficients showed that

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TABLE Source contacts of patients with gonorrhoea traced in selected two month periods (February and May) during 1978-85

Year	No (%) of contacts considered to be:		
	Traceable	Untraceable	Other*
1978 (n=62)	31 (50)	12 (19)	19 (31)
1979 (n=98)	49 (50)	14 (14)	35 (36)
1980 (n=95)	58 (61)	15 (16)	22 (23)
1981 (n=47)	20 (43)	10 (21)	17 (36)
1982 (n=40)	18 (45)	8 (20)	14 (35)
1983 (n=13)	8 (62)	2 (15)	3 (23)
1984 (n=62)	38 (61)	17 (27)	7 (11)
1985 (n=63)	41 (65)	14 (22)	8 (13)

* Already attending this or another clinic, or refusing to attend.

there was no correlation between yearly incidence and the two variables chosen to show contact tracing efficiency.

Discussion

A strong positive or negative correlation between yearly incidence of gonorrhoea and contact tracing efficiency could imply good control due to contract tracing; this has not been shown in the report published

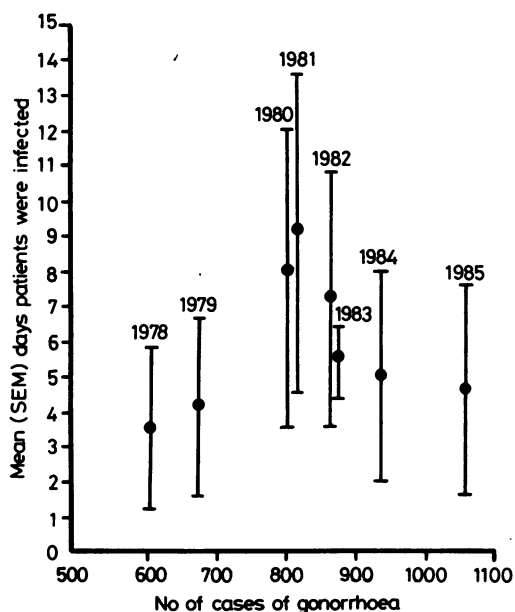


FIG 1 Mean (SEM) infectious patient days (days between start of contact tracing and attendance of contact) compared with incidences of gonorrhoea 1978-85.

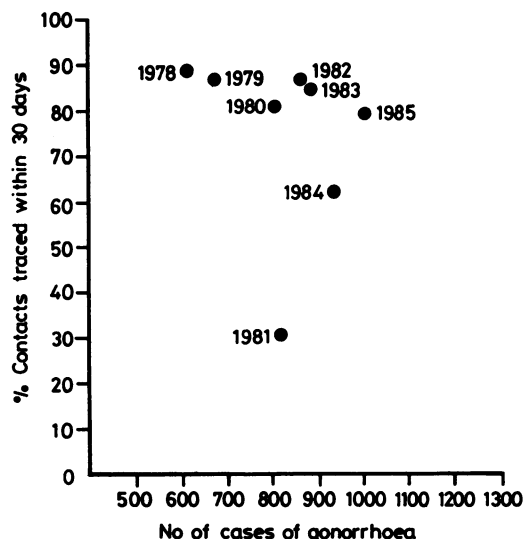


FIG 2 Percentage of source contacts successfully traced within 30 days compared with incidences of gonorrhoea 1978-85.

here. The concept of the "source" and the variables chosen to assess contact tracing efficiency may be questioned. They do, however, attempt to quantify the situation in a way that has not, to my knowledge, been used before.

These conclusions are somewhat surprising, and several explanations are possible. (1) The yearly incidence figures for gonorrhoea are a poor index of control. This has been argued before and it is an explanation that I agree with. (2) The variables chosen to assess contact tracing efficiency are fallacious. I have discussed this above. (3) Contact tracing of known "high risk" sources has not, in this city, taken precedence. We attempt to bring to investigation all sexual contacts of patients with gonorrhoea; source or secondary, "high risk" (or known before) or "low-risk". It might be more efficient to concentrate limited resources upon the "high-risk" sexual contacts who will be known locally to each clinician and his contact tracers.

Concerning point (3), we have shown previously that the contribution of patients with repeated episodes of gonorrhoea ("repeaters") (higher risk) to the total incidence is a constant.⁵ Reduction in this constant ought to bring about a reduction in total incidence. Kinghorn *et al* defined the social characteristics of the repeater; support for their thesis has come from Rothenberg⁶ and Potterat *et al*.⁷ These two groups of workers postulated the maintenance of the endemicity of gonorrhoea by certain sub-groups in their city populations (the "core groups"). Demographically,

the core groups of these authors correspond to our repeaters. Concentration of contact tracing activities and clinical facilities on the repeaters or core groups will possibly pay dividends. On the other hand, Felton's theory holds a certain attraction.

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